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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,348	12/02/2003	Toyohiko Mitsuzawa	Q78682	1382
23373	7590	12/12/2006		
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			EXAMINER MARTIN, LAURA E	
			ART UNIT 2853	PAPER NUMBER

DATE MAILED: 12/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/725,348

Applicant(s)

MITSUZAWA ET AL.

Examiner

Laura E. Martin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

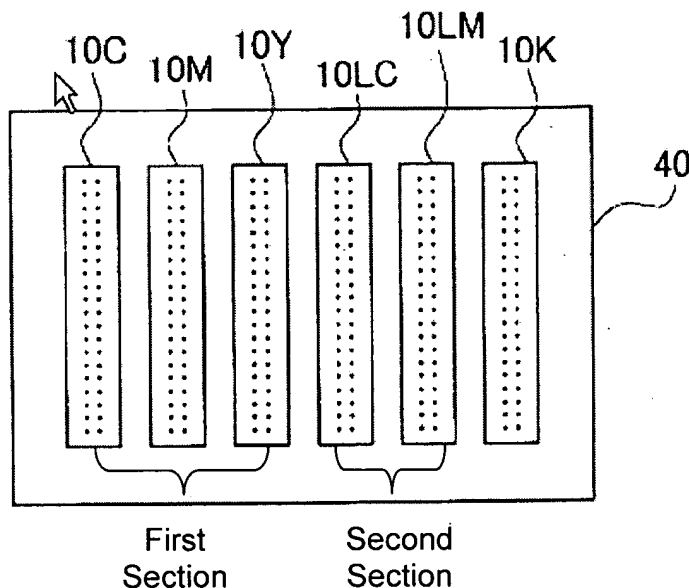
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 11, 12, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawano (US 2002/0060706) in view of Hosono (US 6488354).

Sawano discloses the following claim limitations:

As per claim 1, Sawano teaches a printing apparatus (figure 5) comprising: a plurality of ink ejecting sections (figure 5) for ejecting ink, wherein said printing apparatus prints an image on a medium (figure 5, element P) to be printed by ejecting ink from said ink ejecting sections [0077]; and wherein said ink ejecting sections include a first ink ejecting section that is set to eject ink for printing a highlight region in said image (figure 4, elements LC and LM); and a second ink ejecting section that is set not to eject the ink for printing said highlight region in said image (figure 4, elements C, M, and Y).



As per claim 2, Sawano teaches a printing apparatus wherein: said image is printed with dots that are in at least two sizes (figure 3e, elements Da and Db) and that are formed with the ink ejected from said ink ejecting sections; and among said dots that are in said at least two size, dots that are formed for printing said highlight region with the ink ejected from said first ink ejecting section that are dots other than dots of the largest size [0059].

As per claim 3, Sawano teaches a printing apparatus wherein: among said dots other than the dots of the largest size, the dots that are formed for printing said highlight region with the ink ejected from said first ink ejecting section are dots of the smallest size [0059].

As per claim 4-6, Sawano teaches a printing apparatus wherein: said image is printed with at least two kinds of dots (figure 3e, elements Da and Db) formed using a

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plurality of kinds of inks that differ in darkness (figure 4, elements C, Y, M, LC, and LM) and that are ejected from said ink ejecting sections (figure 4); and among said at least two kinds of dots, dots that are formed for printing said highlight region with the ink ejected from said first ink ejecting section are dots formed using the lightest ink ([0059], light ink), wherein: among said dots formed using ink other than the darkest ink, the dots that are formed for printing said highlight region with the ink ejected from said first ink ejecting section are dots formed using the lightest ink ([0059], light ink), and said inks that differ in darkness include cyan ink, light cyan ink that is lighter than said cyan ink, magenta ink, and light magenta ink that is lighter than said magenta ink; and the dots that are formed for printing said highlight region with the ink ejected from said first ink ejecting section are dots formed using said light cyan ink and said light magenta ink [0059].

As per claim 11, Sawano teaches a printing apparatus wherein: the setting for said ink ejecting sections is changed according to print modes (gradation level, [0054-0067], figures 3a-e).

As per claim 12, Sawano teaches a printing apparatus wherein: said medium (P) to be printed is printed on while being carried in a predetermined direction (figure 5, element y); said ink ejecting sections are arranged in a row (figure 4) in the direction in which said medium to be printed is carried to form a row of ink ejecting sections; and said first ink ejecting section is at most half of continuously-arranged ink ejecting sections among all ink ejecting sections belonging to said row of ink ejecting sections (figure 10 CMY, 10' LC LM).

As per claims 16 and 17, Sawano teaches a method for printing using a printing apparatus that includes a plurality of ink ejecting sections for ejecting ink [0001] and a method for manufacturing a printed article that is printed using a printing apparatus that includes a plurality of ink ejecting sections for ejecting ink wherein said printing apparatus prints an image on a medium (figure 5, element P) to be printed by ejecting ink from said ink ejecting sections [0077]; and wherein said ink ejecting sections include a first ink ejecting section that is set to eject ink for printing a highlight region in said image (figure 4, elements LM and LC); and a second ink ejecting section that is set not to eject the ink for printing said highlight region in said image (figure 5, elements M, Y, and C) and wherein said first ink ejecting section and said second ink ejecting section are provided at different positions (see positions below; [0045-0047]) in a direction in which the medium to be printed is carried ([0077] if the printhead is scanned across the medium being carried, the ink ejecting sections must be in a direction parallel to the medium being carried to allow for an even application of colors).

As per claim 18, Sawano teaches a printing apparatus comprising: a plurality of ink ejecting sections (figure 4) for ejecting ink, wherein said printing apparatus prints an image on a medium (figure 5, element P) to be printed by ejecting ink from said ink ejecting sections [0077]; and wherein the ink ejecting sections to be used for ejecting ink to print a portion of said image is determined, from among said ink ejecting sections, according to the darkness of said portion [0067] and wherein said first ink ejecting section and said second ink ejecting section are provided at different positions (see positions below; [0045-0047]) in a direction in which the medium to be printed is carried

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([0077] if the printhead is scanned across the medium being carried, the ink ejecting sections must be in a direction parallel to the medium being carried to allow for an even application of colors).

Sawano does not disclose the following claim limitations:

As per claims 1 and 16-18: the second ink ejecting section is subject to a greater vibration than said first ink ejecting section.

Hosono et al. disclose the following claim limitations:

As per claims 1 and 16-18: the second ink ejecting section is subject to a greater vibration than said first ink ejecting section (column 13, lines 35-55).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus taught by Sawano with the disclosure taught by Hosono et al. in order to allow for smaller amounts of ink to be used in normal recording modes and for easier ink ejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sawano (US 2002/0060706) and Hosono (US 6488354), and further in view of Endo (US 6460963).

Sawano as modified teaches a printing apparatus wherein the darkness level of said highlight region is at most 35% (Figure 3b, 10%); however, it does not disclose a darkness level of the darkest region in said image is 100%.

Endo teaches a darkness level of 100% (column 5, lines 9-11).

It would have been obvious at the time of the invention for one of ordinary skill in the art to modify the printing apparatus taught by Sawano as modified with the teachings of Endo in order to create a better print quality.

Claims 8, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawano (US 2002/0060706) and Hosono (US 6488354), and further in view of Arquilevich et al. (US 6764158).

As per claims 8-10, Sawano as modified teaches a printing apparatus comprising a moving member causes the cartridge to move [0077]; said dots formed by ejecting ink from said ink ejecting sections while causing said holding section to move using said moving member [0077]. Sawano as modified also teaches all of said ink ejecting sections are allowed to eject ink for printing regions other than said highlight region [0067].

Sawano as modified does not teach a holding section for movably holding said ink ejecting sections or a first ink ejecting section is an ink ejecting section among said ink ejecting sections that is located on the side closer to an engaging section where said holding section and said moving member engage.

Arquilevich et al. teaches a holding section (figure 4, element 100) for movably holding said ink ejecting sections or a first ink ejecting section is an ink ejecting section among said ink ejecting sections that is located on the side closer to an engaging section where said holding section and said moving member engage (all cartridges are an equal distance from the carriage that is on the bottom - figure 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Swano as modified with that of Arquilevich et al. in order to improve the speed of printing.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sawano (US 2002/0060706) in view of Hosono (US 6488354), Arquilevich et al. (US 676158) and Endo (US 6460963).

Sawano discloses the following claim limitations:

Sawano teaches a printing apparatus comprising: a plurality of ink ejecting sections a plurality of ink ejecting sections (figure 5) for ejecting ink, wherein said printing apparatus prints an image on a medium (figure 5, element P) to be printed by ejecting ink from said ink ejecting sections [0077]; and wherein said ink ejecting sections include a first ink ejecting section that is set to eject ink for printing a highlight region in said image (figure 4, elements LM and LC); and a second ink ejecting section that is set not to eject the ink for printing said highlight region in said image (figure 4, elements C, M, and Y); wherein: said image is printed with dots that are in at least two sizes (figure 3e, elements Da and Db) and that are formed with the ink ejected from said

ink ejecting sections; and among said dots that are in said at least two size, dots that are formed for printing said highlight region with the ink ejected from said first ink ejecting section that are dots other than dots of the largest size [0059], wherein all of the said ink ejecting sections are allowed to eject ink for printing regions other than the highlighted region (P67) and the setting for the ink ejecting sections is changed according to print modes [0054-0067]; said image is printed with at least two kinds of dots (figure 3e, elements Da, Db) that are formed with the ink ejected from said ink ejecting sections and are formed by dots that are at least two sizes and that are formed with the ink ejected from said ink ejecting sections (figure 3e), and by using cyan ink, light cyan ink, that is lighter than cyan ink, magenta ink, and light magenta ink that is lighter than magenta ink ([0063], L/I, [0046]) which differ in darkness; the dots that are formed for printing said highlight region with the ink ejected from the said first ink ejecting section are either dots of among the smallest size that are in at least two sizes [0059] or dots formed using said light cyan ink and light magenta ink, said printing apparatus further comprises a moving member that engages the cartridge [0077], said ink ejecting sections are grouped into at least two groups (figure 2, elements 10/10'); each group of said ink ejecting sections forms an ink ejecting unit [0043]; said dots are formed by ejecting ink from said ink ejecting sections while causing said holding section to move using said moving member [0076-0077]; said medium to be printed is printed on while being carried in a predetermined direction ([0077], figure 5-y); said ink ejecting sections are arranged in a row in the direction in which said medium to be printed is carried to form a row of ink ejecting sections (figure 4, [0077]); and said first ink ejecting

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section is at most half of continuously-arranged ink ejecting sections among all ink ejecting sections belonging to said row of ink ejecting sections and wherein said first ink ejecting section and said second ink ejecting section are provided at different positions (see positions below; [0045-0047]) in a direction in which the medium to be printed is carried ([0077] if the printhead is scanned across the medium being carried, the ink ejecting sections must be in a direction parallel to the medium being carried to allow for an even application of colors).

Sawano does not disclose the following claim limitations:

Sawano does not teach a darkness level of the darkest region in said image is 100% or a holding section for movably holding said ink ejecting sections, a first ink ejecting section is an ink ejecting section among said ink ejecting sections that is located on the side closer to an engaging section where said holding section and said moving member engage, or said second ink ejecting section is subject to a greater vibration than said first ink ejecting section.

Hosono et al. disclose the following claim limitations:

As per claim 13: the second ink ejecting section is subject to a greater vibration than said first ink ejecting section (column 13, lines 35-55).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus taught by Sawano with the disclosure taught by Hosono et al. in order to allow for smaller amounts of ink to be used in normal recording modes and for easier ink ejection.

Endo discloses the following claim limitations:

Endo teaches a darkness level of 100% (column 5, lines 9-11).

It would have been obvious at the time of the invention for one of ordinary skill in the art to modify Sawano's invention with the teachings of Endo in order to create a better print quality.

Arquilevich et al. discloses the following claim limitations:

Arquilevich et al. teaches a holding section (figure 4, element 100) for movably holding said ink ejecting sections or a first ink ejecting section is an ink ejecting section among said ink ejecting sections that is located on the side closer to an engaging section where said holding section and said moving member engage (all cartridges are an equal distance from the carriage that is on the bottom - figure 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Swano with that of Arquilivich et al. in order to improve the speed of printing.

Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawano (US 2002/0060706) and Hosono (US 6488354), and further in view of Matsumoto et al. (US 6439683).

Sawano teaches a printing apparatus (figure 5) comprising: a plurality of ink ejecting sections (figure 5) for ejecting ink, wherein said printing apparatus prints an image on a medium (figure 5, element P) to be printed by ejecting ink from said ink ejecting sections [0077]; and wherein said ink ejecting sections include a first ink ejecting section that is set to eject ink for printing a highlight region in said image (figure

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4, elements LM and LC); and a second ink ejecting section that is set not to eject the ink for printing said highlight region in said image (figure 4, elements CMY) to print said highlight region by making said first ink ejecting section eject ink [0059] and wherein said first ink ejecting section and said second ink ejecting section are provided at different positions (see positions below; [0045-0047]) in a direction in which the medium to be printed is carried ([0077] if the printhead is scanned across the medium being carried, the ink ejecting sections must be in a direction parallel to the medium being carried to allow for an even application of colors).

Sawano does not disclose the following claim limitations:

Sawano does not teach a computer-readable storage medium having recorded thereon a program or a computer system comprising a computer or the second ink ejecting section is subject to a greater vibration than said first ink ejecting section.

Hosono et al. disclose the following claim limitations:

As per claims 14 and 15: the second ink ejecting section is subject to a greater vibration than said first ink ejecting section (column 13, lines 35-55).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus taught by Sawano with the disclosure taught by Hosono et al. in order to allow for smaller amounts of ink to be used in normal recording modes and for easier ink ejection.

Matsumoto et al. disclose the following claim limitations:

Matsumoto et al. teaches a computer-readable storage medium (figure 1, element 4) having recorded thereon a program or a computer system comprising a computer (column 6, lines 26-29).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Sawano with the teachings of Matsumoto in order to easily control the printing apparatus.

Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawano (US 2002/0060706) and Hosono (US 6488354), and further in view of Matsumoto et al. (US 2002/0008731).

Sawano discloses the following claim limitations:

Sawano teaches a printing apparatus comprising: a printhead for ejecting ink having at least a black nozzle row, a cyan nozzle row, a magenta nozzle row, and a yellow nozzle row (figure 4); wherein said printing apparatus prints an image on a medium (figure 5, element P) to be printed by ejecting ink from the head [0001]; wherein the printhead comprises a first section that is set to eject ink for printing a highlight region in said image (figure 4, elements LC and LM) and a second section that is not set to eject the ink for printing said highlight region in said image (figure 4, elements C, M, and Y), wherein the first and second sections are provided at different positions (see positions below; [0045-0047]) in a direction in which the medium to be printed is carried ([0077] if the printhead is scanned across the medium being carried, the ink ejecting sections must be in a direction parallel to the medium being carried to allow for an even

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application of colors), wherein the printhead to be used for ejecting ink to print a portion of the image is determined, according to the darkness of said portion (figures 3a-3e).

Sawano does not disclose:

Sawano does not teach a plurality of print heads or the second ink ejecting section is subject to a greater vibration than said first ink ejecting section.

Hosono et al. disclose the following claim limitations:

As per claims 19 and 20: the second ink ejecting section is subject to a greater vibration than said first ink ejecting section (column 13, lines 35-55).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus taught by Sawano with the disclosure taught by Hosono et al. in order to allow for smaller amounts of ink to be used in normal recording modes and for easier ink ejection.

Matsumoto discloses the following claim limitations:

Matsumoto et al. teaches a plurality of printheads (figure 5, element 22) for ejecting ink, which are provided in different positions.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the printing apparatus of Sawano with the disclosure of Matsumoto et al. in order to create a higher quality printing system that accurately distributes ink.

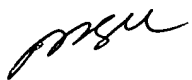
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura E. Martin whose telephone number is (571) 272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Laura E. Martin

 12/5/06
MANISH S. SHAH
PRIMARY EXAMINER